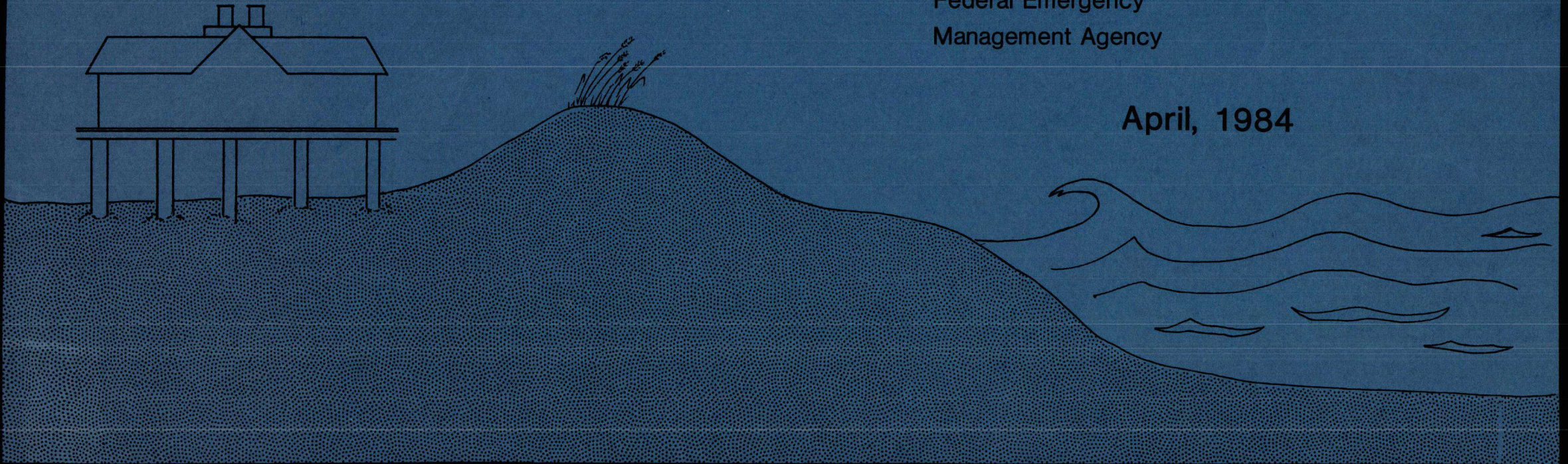


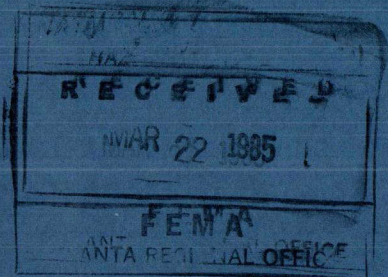
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# STORM PREPAREDNESS PLANNING GUIDE

Federal Emergency  
Management Agency

April, 1984





# **STORM PREPAREDNESS PLANNING GUIDE**

This guide was prepared by the Coastal Area Planning and Development Commission, Brunswick, Georgia, for the Federal Emergency Management Agency under Contract Number EMA-K-0076. The author is solely responsible for the accuracy of the statements and interpretations contained in this publication. Such interpretations do not necessarily reflect the views or policies of the Government.

April, 1984

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# INTRODUCTION

## INTRODUCTION

A storm preparedness program is more than just a set of documents containing response procedures. It is an ongoing coordinated effort to prepare the general public for emergency situations. It is also an effort to prepare responsible public and private agencies and groups that direct, control and support operations in emergency situations. In short, it is the difference between having a written plan and active planning.

Detailed pre-emergency planning and coordination is crucial to the successful evacuation of a coastal area. Implementation

of a storm preparedness program promotes the effective and efficient movement of people in an evacuation. It also provides guidance to local officials involved in the pre-emergency planning, evacuation and recovery phases by providing a predetermined basis for decision making.

This document is intended to supply the reader with an analysis of the elements of a broad program of storm preparedness that can be implemented at the local (city or county) level, but is most appropriate for regional (multi-county) application.

Presented herein is a synopsis of the Federal Emergency Management Agency (FEMA) pilot program in storm preparedness that was fully implemented in the coastal Georgia area during 1980 through 1983. A detailed discussion

follows, which includes an analysis of each of the five major components of the program.

In particular, descriptions of the advisory council used to guide the program and the four separate program elements of planning, education, mapping and mitigation will be presented. Examples of materials published for the coastal Georgia pilot project are included in Attachments A through C.

One of the primary goals of the prototype coastal Georgia program was the ultimate transfer of the successful aspects of the program to other coastal substate areas in the United States. The purpose of this publication is to provide the reader with a tangible collection of useful information on a storm preparedness program and to identify specific

activities/issues that should be considered as such a program is developed.

The five major program elements are discussed in the following order: Intergovernmental Coordination (via the Advisory Council that guided the development of the coastal Georgia program) and the four major functional areas of the prototype program, which included: planning; public education; mapping and mitigation. Each section is designed to give the reader a step-by-step feel for the procedures that can be used in developing a storm preparedness program.

In addition, commentary and suggestions are also offered relative to various program phases in the insets to the right of the text. This material is intended to provide insight into the model coastal Georgia and how it was undertaken.

INTERGOVERNMENTAL  
COORDINATION

## INTERGOVERNMENTAL COORDINATION

Effective direction and control in planning a storm preparedness program provides the initial guidance necessary to develop and implement the program recommendations in a coordination and organized fashion. To be effective in the implementation stage, the responsibility for direction and control during the planning process should be placed with those who have a direct interest in program outcome and who will be charged with carrying out the plans and related procedures that will eventually evolve from the program.

To ensure coordination of the program, as well as implementation of each function, it has been found that advisory groups representing all involved public and private agencies and groups can serve a valuable function. For example, in Mobile County, Alabama, a civil defense authority was created as the governing board of the Mobile County Civil Defense Organization. It represents membership from political entities in the county as well as the county

*Local disaster response plans should be based on the identified geographic "risk areas" and the necessary public and private response needed to minimize risk exposure. Plans should clearly identify and organize local response efforts and realistically estimate the anticipated support that will be provided from the federal and state levels that can be brought "on line" in the event of a disaster. In addition to traditional top down, vertical lines of outside assistance from the state or federal levels, local plans should accurately portray projected assistance that can be obtained from other local governments outside the disaster area. The use of*

itself. Such an organization also exists in Chatham County, Georgia (a civil defense advisory body to the Chatham County/City of Savannah Civil Defense Department).

Advisory groups can be found at the state level as well. In several states, these groups are composed of representatives from each federal/state agency involved in storm preparedness activities. Such groups have input into the formulation and review of state hurricane response plans and related matters.

Most substate/regional planning agencies also routinely use advisory councils or boards to guide the development of their various programs and activities. These groups, made up of local officials, business and industry, institutions, special interest group members, and the citizenry, are established to effectively represent the views of the region within a specific functional area (i.e., Economic Development, Historic Preservation, Transportation, etc.). In a comprehensive storm preparedness program undertaken at

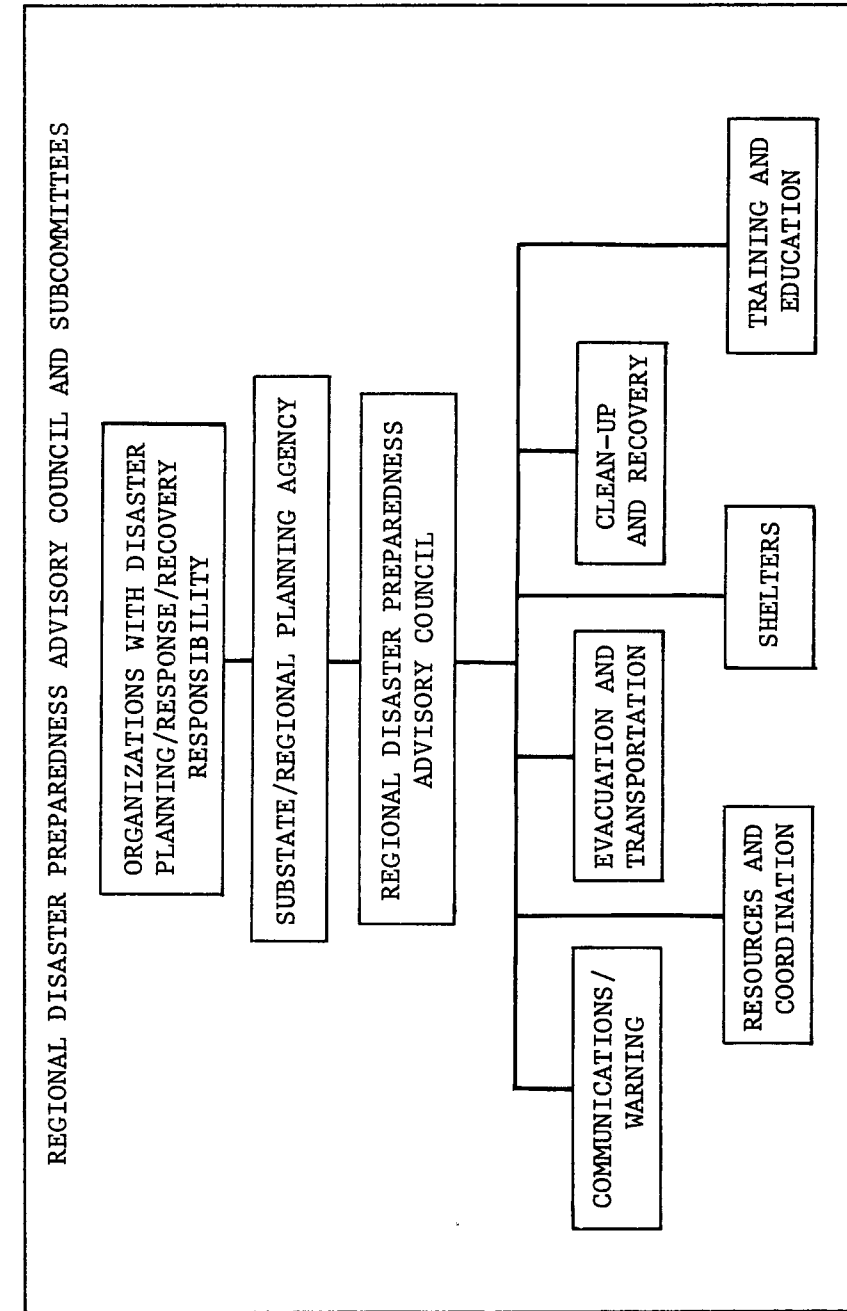
*inter-local mutual-aid agreements can serve this purpose.*

*The CAPDC study determined that some coastal areas around the country are undertaking one or two, but not all, of the five elements of the coastal Georgia program for various disaster preparation. Moreover, in other coastal areas where multiple disaster preparedness functions are being undertaken, they are in several instances not being adequately integrated - thus diminishing their overall benefits.*

*The results of the coastal Georgia project have proven that*

the substate regional level, an advisory council and appropriate subcommittees should be developed to provide program guidance and provide ongoing oversight of program activities.

Advisory groups, as conceived here, should transcend levels and departments of government to coordinate activity and to serve the citizens in the most effective manner possible. Since major storms will affect part or all of a region, such an advisory council should be representative of the entire region. The adjacent figure provides a suggested organizational structure for a regional storm preparedness advisory council and subcommittees. Such an advisory council on storm preparedness should be composed of senior officials of primary groups/agencies with direct or indirect "response" roles. Council subcommittees, composed of secondary response groups/agencies, should provide assistance to the council on topics/functions where specific expertise is required.



In terms of response roles at the regional and local levels, primary and secondary response agencies/groups and service providers should be identified by interviews with state and local officials and others with authority for preparedness, response, and recovery. This should be supplemented by research of applicable state and local legislation governing emergency preparedness. In general, a realistic assessment of which agencies/groups actually provide a service during disaster situations should be made; representatives from these groups should be considered for membership. A sample listing of potential agencies/groups that should be considered for such a council are identified in Appendix B.

It is important that advisory council members be individuals who are committed to the program and will attend regular meetings to help formulate programs and maintain the emerging preparedness planning process. A letter of commitment from each agency or group represented can help in solidifying participation in advisory council activities.

*substate/regional agencies can serve as vehicles to aid local governments in comprehensive emergency planning. Other general "findings" of the coastal Georgia experience indicate that a multi-functional application incorporating several emergency preparedness elements into a systematic approach is feasible and can produce significant results. However, individual local governments (particularly rural ones) do not possess the internal capability to effectively undertake the technical or coordinative aspects of such a multi-faceted project without extensive professional assistance. At the outset of the coastal Georgia program, the CAPDC formed an Advisory Council on Storm Preparedness,*

Regular meetings of both the council and appropriate subcommittees should be used initially to establish an educational framework for a storm preparedness planning effort. This educational framework is essential in the development of a comprehensive, integrated preparedness program that will yield coordinated and effective results.

Once the advisory council has been appointed, regular meeting times and places must be established. Officers must also be elected, and bylaws must be reviewed and adopted. (See Appendix A - Advisory Council Bylaws.) Announcements regarding the time and place of the meetings, including agenda, program notes, materials to be reviewed and discussed at the upcoming meeting, minutes of preceding meetings, etc., should be prepared and mailed to each council member at least 10 days prior to each meeting. To encourage good attendance, always notify the news media of all meetings. Whenever possible, council members should be contacted by telephone prior to each meeting as a reminder. Key elements in sustaining an active and effective council

*consisting of approximately 65 representatives of federal, state, local and volunteer groups, to guide the development of the coastal Georgia program. The council, or its Executive Committee (which met when the full council did not convene), decided what items would be appropriate for the full council to consider and met monthly to provide direction to the CAPDC staff in the preparation of work products identified in the FEMA contract. Both the council and committee meetings served as a forum for discussion of disaster preparedness and response problems and realistic solutions. Seven subcommittees were also established as task force groups to the*

are: (1) provide them with a meaningful decision-making role in designing the program; (2) promote council members becoming directly involved in the program's work; (3) maintain the work program schedule to produce outputs in a timely fashion; (4) publicize program/council accomplishments; and (5) conduct interim evaluations to ensure that original program objectives are being met. Open discussion and interchange at meetings are essential, as well as establishing formal review and approval procedures of all planning, education, and mapping products prior to publication. Interaction among council members will be enhanced through this process and as the program moves along, council participation will intensify.

*Advisory Council to concentrate on the following functional areas:*

- 1. Education*
- 2. Communication and Warning*
- 3. Resources/Coordination/  
Emergency Services*
- 4. Evacuation/Transportation/  
Re-entry*
- 5. Shelters*
- 6. Clean-up Recovery*
- 7. Host County Planning*

*The establishment of this intergovernmental advisory group was instrumental in providing the staff with the essential detailed guidance and technical expertise required to undertake innovative approaches to emergency preparedness and response functions.*

PLANNING

## PLANNING

Written hurricane response plans are the traditional means of consolidating and formalizing operational procedures, identifying resources, and developing alternatives for dealing with a storm occurrence. By definition, a plan is "an orderly arrangement of parts of an overall design or objective."

The major components, or parts, of a hurricane response plan include:

1. Identification of hurricane hazards
2. Responsibilities for direction and control
3. Communications and warning element
4. Public information strategy
5. Evacuation and re-entry procedures
6. Identification of shelters
7. Clean-up and recovery procedures
8. Preparation of technical storm surge data
9. Development of action checklists for public agencies

*Hurricane Response Plans were prepared for each of the six coastal counties and twenty-three inland or "host" counties in Georgia. These plans were developed at the county level to correspond to the Civil Defense organizational framework in Georgia. Each county plan includes a hazard assessment, a description of the authorities within the county governmental structure to deal with emergency response and additional chapters describing various phases of hurricane response activities. These plans address the following functional topics.*

- 1. Direction and Control*
- 2. Communication/Warning*

Attachments A and B present two prototypes, or sample plans, to be used in formulating a hurricane response program. The Chatham County, Georgia plan (Attachment A) is a sample plan geared toward use in coastal counties which will be evacuating; the other (Attachment B) is for use in inland "host" counties which will receive evacuees from coastal areas. Each of the two plan types (evacuating or host county) has been prepared in a manner that promotes its adaptation to the specific needs of other coastal counties. The noticeable advantage of this method is that each type of plan will be basically similar, further enhancing the coordinated intergovernmental emergency response activities of local with state and federal agencies. It is important to note that these plans were developed for specific application to coastal Georgia. Specific items that appear in these plans will differ in other states and regions (e.g., names of state agencies, local offices/titles, etc.).

3.     *Inventory  
      of Resources/Coordination/  
      Emergency Services*
4.     *Evacuation/Transportation/  
      Re-entry*
5.     *Shelters*
6.     *Clean-up and Recovery*

*Assistance from the CAPDC was also provided to the Georgia Civil Defense in updating the Regional Hurricane Evacuation Plan, which encompasses a twenty-nine county area, once the local/county plans had been completed. This regional plan is general in nature and addresses evacuation and shelters for the entire coast of Georgia, including the six coastal counties as well as twenty-three inland or "host*

Also, state laws and local ordinances regarding emergency response may vary greatly from those in Georgia and as such modification of the model may be necessary.

These two types of plans identify the primary local officials responsible for various emergency operations and provide an organizational concept of operational procedures. This includes the organization of response teams and specific functions these teams are expected to carry out. Response activities are "keyed" to the proximity of the approaching storm (amount of time remaining prior to landfall) and the storm's severity. The plans specify coordination of local actions that will complement activities of federal and state agencies that will also respond to an emergency independently of local government. Through such coordination, duplication of efforts and inefficiency can be minimized.

*counties." (Hurricane Response Plans for these twenty-three host counties were completed in 1983 by local Civil Defense offices and their respective regional planning commissions in Georgia without federal assistance.)*

*There is a major advantage to using one type of local plan format for either evacuating and host counties. Such an approach will allow the state emergency management agency and other non-local agencies responsible for various response functions to readily understand and be able to use each county's plan with a minimal amount of time being lost in locating specific material contained in each plan. This is especially significant given the likelihood that a*

Preparing a Prototype Coastal/Host County Hurricane  
Response Plan

Work on a plan should begin with a review of the prototype plans in Attachments A and B, as well as other research. Once completed, thorough research should commence regarding the state's emergency response system and legislative mandates. Locate and become familiar with existing state-wide or regional hurricane response plans prepared by the state emergency response lead agency. Existing state, regional, and local plans (if available) are useful as frameworks for completing local plans for specific counties.

Close coordination with the state lead agency in emergency response is crucial to both the preparation and the implementation of local plans. This agency varies from state to state, usually being the State Civil Defense/Emergency Management Agency, or the State Department of Defense. This agency must be provided ample opportunities to be actively and continually involved in all phases of the local planning

*multi-county area will be affected by a coastal storm and a coordinated, expeditious state and federal response is needed to augment local efforts.*



process, and especially in reviewing and making formal comments on each county's plan prior to its local adoption and publication. Similarly, representatives from each local government receiving a plan must actively participate in the plan's preparation. Active involvement of these individuals in the preparation and development of local plans will establish a dialogue between staff and those who will ultimately adopt and use the plan.

Timing is another important factor to the successful implementation of local plans. Preferably, planning activities and preparation of local response plans should be completed three to six months prior to the beginning of the next annual hurricane season. This early completion of local planning work will allow for a hurricane drill to be conducted to exercise the plan before "the season." This drill, which should be cosponsored by the state lead agency in emergency response and the local government(s) involved, will allow for a "shake-down" and refinement of the new plan.

*A key to successful hurricane response planning is: Keep the plan simple and flexible. The best plan addresses only the essential elements of hurricane response and excludes things that are beyond the objectives of the plan. Planning for every possible contingency is unrealistic and should be carefully avoided.*

EDUCATION  
AND AWARENESS

## EDUCATION AND PUBLIC AWARENESS

Local public response to an emergency situation should be a predictable, programmed response. The best local emergency management plans are of little value if the public does not know what response is expected of them and why. In the case of seasonal threats such as hurricanes, the beginning of the hurricane season is an excellent time to intensify public awareness and education activities. Such a concentrated effort can be conducted through a series of public meetings, use of news media, and extensive distribution of printed information. Radio and television spots (public service announcements) as well as newspaper articles can be valuable in catching the public's attention. There are a variety of approaches that local governments can use to produce an effective public awareness program. A listing of these alternatives is presented below and examples of printed material are contained in Attachment C.

- (1) Printed material
- (2) Special activities

*At the outset of the model program, it was decided that the primary focus of the education element should be based on a "direct contact" concept. The direct concept approach was decided upon because it is a more personal form of reaching the population with information pertaining to the hurricane. Although the media (local newspapers, radio, television, etc.) were also used to acquaint and educate coastal residents of the "do's and don'ts" of emergency situations, it was determined that*

- (3) Audio visual aides
- (4) News media
- (5) Private organizations and volunteers

### Printed Material

The use of printed material such as brochures or other simple hand-outs is desirable, because it places "hard copy" information into the hands of the public. This material should be brief, easy to understand, and contain graphic "eye catchers" to attract attention. It should contain only basic information that will remain unchanged. A hurricane awareness brochure or hand-out should include:

- (1) Definitions of "hurricane watch" and "hurricane warning" and other National Weather Service terms.
- (2) Public response activities needed when a hurricane watch and/or warning is issued (i.e., instructions on the means of securing the home, supplies to take to a shelter, etc.).

*holding a series of workshops/seminars for specific target groups would yield the best results.*

*Prior to hosting these workshops, large quantities of appropriate printed material, suitable for distribution to individual target groups, was prepared. This material included booklets with hurricane action guidelines for each of the five target groups, hurricane tracking charts and other more "group specific" items. This printed information was disseminated to workshop participants.*

*Five general classifications of target groups were identified. These five*

- (3) Evacuation map showing low lying areas projected to experience flooding, evacuation routes, and shelter locations and descriptions.
- (4) Information about flood insurance protection.
- (5) Where to get information about an approaching storm and necessary response activities (i.e., radio and television stations).

Special material should be oriented to groups that will experience more unique problems, such as marina operators and boat owners, hotel/motel managers, children, elderly, etc. Distribution of material can be managed in a variety of ways; however, distribution should be broad based.

Distribution racks can be placed in local businesses, community centers, and other locations accessible to the public. The cost of printed materials can be sponsored by the local government or various businesses and industries in the community. Local supermarket chains can receive favorable publicity from using grocery bags with information

*groups were selected because they are faced with unique problems in dealing with a hurricane. They were: (1) elected and appointed local government officials; (2) the elderly, (3) marina operators; (4) resort hotel/motel operators; and (5) school children.*

*Prior to conducting these workshops, appropriate printed material, suitable for distribution to individual target groups, was prepared. This material included booklets with hurricane action guidelines for each target group, hurricane tracking charts and personnel assignments lists. This printed information was disseminated to workshop participants.*

printed on them. A special "pull-out" section of a newspaper is an extremely useful tool. Such a publication could include articles and photographs about the history of hurricanes in the area, flooding events, or tornado occurrences. It could include maps showing where such disasters have occurred, pinpointing the geographic area affected. Interviews with local residents who have survived such disasters make interesting reading and prove a point. Local businesses may wish to purchase advertising space to support the publication of the special section. Insurance agents also may point out insurance precautions.

Local telephone companies can greatly assist in the distribution of evacuation information. "Camera ready" artwork of the local evacuation map can be prepared for insertion in the next edition of the local telephone directory. If this alternative is selected, the artwork should be presented to the telephone company well in advance of the publication date of the telephone book. Local civil defense offices should become actively involved in urging

*The procedure for establishing contact with individual entities within each target group will vary. Local elected and appointed officials are easy to identify and will also maintain a strong interest in this program. Therefore, the process of obtaining their participation in education workshops is not difficult. Workshops with individual county/city representatives (or consortiums of county/city officials) can also be effective. All local government officials within the planning area should be invited to participate in this type of workshop. Since this target group is probably the most aware of emergency preparedness and response*

telephone companies to print the evacuation map in telephone books.

The use of meetings is one of the best methods to provide detailed information directly to the public. In most areas, the public's attention is not oriented to storm preparedness because it seems to be a remote possibility. Therefore, to encourage attendance at public meetings, broad publicity efforts through the use of news media and/or distribution of meeting announcements by civic groups and volunteers is needed.

A multi-county (regional) hurricane awareness program should include public meetings throughout the area on an intermittent basis. These meetings should be held for the general public as well as special population groups. The elderly population may be unlikely to attend public meetings. Therefore, special sessions could be held at retirement homes, community centers for the elderly, and

*procedures, the sessions for these participants should concentrate more on the training aspects of an emergency situation and be directed at "nuts and bolts" issues (e.g., legal authority and responsibility, intergovernmental coordination, etc.)*

*Workshops for special population segments need to be arranged in a slightly different manner. More specifically, population segments which are predicted to have unique problems in a disaster response situation should be located and contacted. Public, semi-public and private organizations can be used as the primary mechanisms to establish contact with these*

other places where the elderly may gather. As noted previously, other segments of the population with special educational needs include boat owners, hotel/motel owners, school children, institutions, and major employers of the area, and strategies of contacting those target groups should be devised.

Meetings, whether for the general population or special segments of it, should be entertaining as well as informative. Examples of information that should be presented at hurricane awareness meetings include:

- (1) Science of hurricane development and hurricane history of the area
- (2) Pre-season preparedness (encourage "family disaster plans")
- (3) National Weather Service (NWS) hurricane warning system information and what it means
- (4) Pre-hurricane preparedness (i.e., in a hurricane awareness program this should include, how to

*individuals. Examples of these types of organizations include: hotel/motel associations, senior citizen organizations, boating and fishing clubs, etc. These groups can be offered an opportunity to participate in individual workshop sessions directed at their unique problems and issues.*

*Example topics to be covered for each of these groups include:*

*Elderly: (1) use of the "Action Checklist" that specifies recommended preparedness and response actions; (2) procedures for obtaining public transportation; (3) procedures for obtaining medical assistance; and (4) unique localized problems and issues.*

secure a home and/or business property, what provisions to make, and what to do if evacuation is necessary)

One of the best ways to reach a group of people with information that is educational in nature is through a workshop.

To ensure a successful workshop, presentations should be brief and to the point (under one hour), and should be supplemented with audio-visual aids such as films or slide presentations to keep it entertaining.

Workshops will likely be hosted by the agency or club for which the workshop is planned. The role of the host organization should include supplying a meeting place for the workshop. If the host organization cannot provide enough space for the workshop, it may be possible to reserve a meeting area in a public building (e.g., library, civic center, city hall). After the workshop is completed, the



Resort Hotel/Motel Operations: (1) methods/procedures for determining elevation of property in order to estimate safety requirements; (2) clarification of damage probabilities from storm surge and wind; (3) recommended means of warning occupants; and (4) legal liability status.

host organization should be asked to critique the presentation. Comments and criticisms should be used in adjusting the workshop format and in an overall assessment of this public awareness method.

These are advantages to having one staff person assigned to coordinate all workshops. This individual can maintain contact with the news media to promote the public's interest in the workshops. Hurricane awareness advice, evacuation maps and other appropriate information should be made available to the media in conjunction with the workshop.

Any printed materials should be prepared in sufficient quantity and distributed to the audience at the workshops.

The yellow pages of the local telephone directory is an excellent reference to gather a list of groups possibly interested in hosting a workshop on hurricane awareness. (For example, boat clubs, senior citizens centers, hotels,

Marina Operators: (1) marina communications; (2) identification of alternative locations to temporarily moor large pleasure craft; (3) procedures/methods of maximizing the safety of marinas during a storm event; and (4) legal liability status.

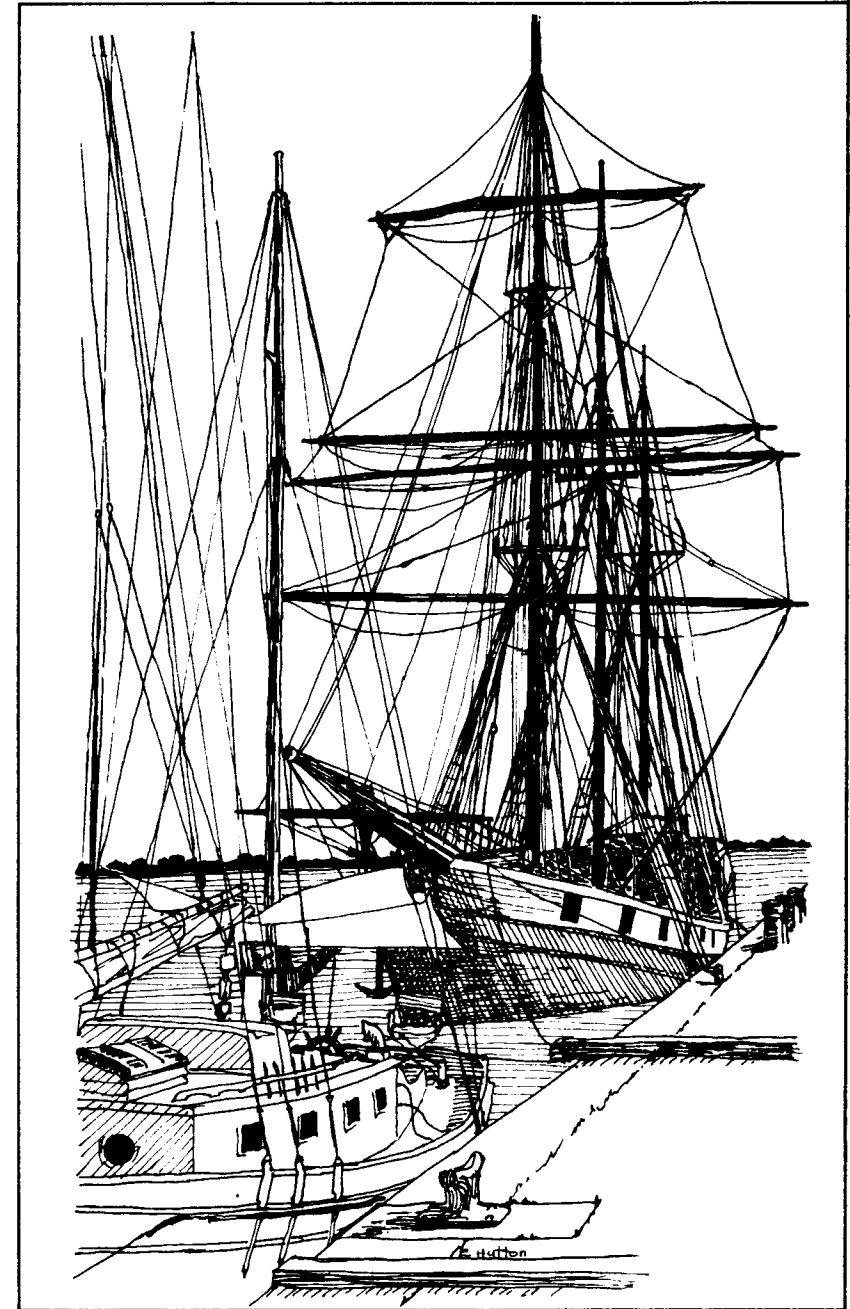
The precise number of workshops to be held for these special population segments is dependant upon the level of interest expressed by these groups and available staff time. In the coastal Georgia program a total of forty workshops were held for these groups in a six county area, with the majority of the activity occurring in the summer and fall of 1982.

and schools are potentially good groups.) Workshops should be scheduled just prior to or early in the hurricane season when public interest is beginning to increase. This is particularly true of public schools, which prefer to be notified of the availability of the workshop several months in advance of the hurricane season.

#### Audio-visual Aids

Local libraries are repositories for films, tapes, and other visual ideas. National Weather Service and local, state and federal civil defense materials could be incorporated into local libraries.

New materials can also be created by local public interest groups, schools and universities and the news media. Films could be produced by university students as special projects. Journalism or communications students may be able to make films or audio-visual packages as graduate projects.



Captioned films or tapes can be prepared for the visually handicapped or deaf population. Video tapes and public service announcements could be prepared for the news media. Visual aides can also be stocked in places other than libraries and loaned to civic clubs and other groups. Banks, utility companies, local civil defense, and regional agency offices can also be repositories for such material.

#### News Media

The news media is one of the most valuable tools a community can utilize in promoting hurricane awareness and disseminating public information. In addition to regular news coverage promoting meetings, a series of special efforts can be undertaken. Special efforts could include:

- (1) Newspaper feature stories and articles
- (2) Interviews with noteworthy individuals (e.g., NWS forecaster, survivor of a disaster)
- (3) Public service announcements

*To augment the workshop approach, the CAPDC used media (newspapers, radio and television) to create an increased public awareness of emergency preparedness procedures. Examples of such techniques used include: (1) having local newspapers publish evacuation maps and related material at the outset of the storm season, and (2) prepare Public Service Announcements (PSA) for use on local radio and television stations, describing emergency preparedness and response procedures.*

*Through the above-mentioned methods, an effective public education program was conducted that reached many residents of the coastal Georgia area. Public awareness and education is a major*

Promotional support of local emergency service agencies can be varied, depending on the needs of a particular area. This support could include promotion for hurricane awareness week, for public or special meetings, to call attention to displays, and to advertise visual aides for loan.

Workshops can be held for the news media personnel to ensure they are informed. Representatives of local civil defense organizations and the National Weather Service can help the media gain a better understanding of the technical aspects of "weather language" and local civil defense operations. Close coordination will provide the media with the means of obtaining and disseminating accurate and timely information to the public. News media involvement can be as extensive or innovative as resources permit and the community requires.

#### Private Organizations and Volunteers

The use of local community resources can help maximize the effectiveness of public information about storm

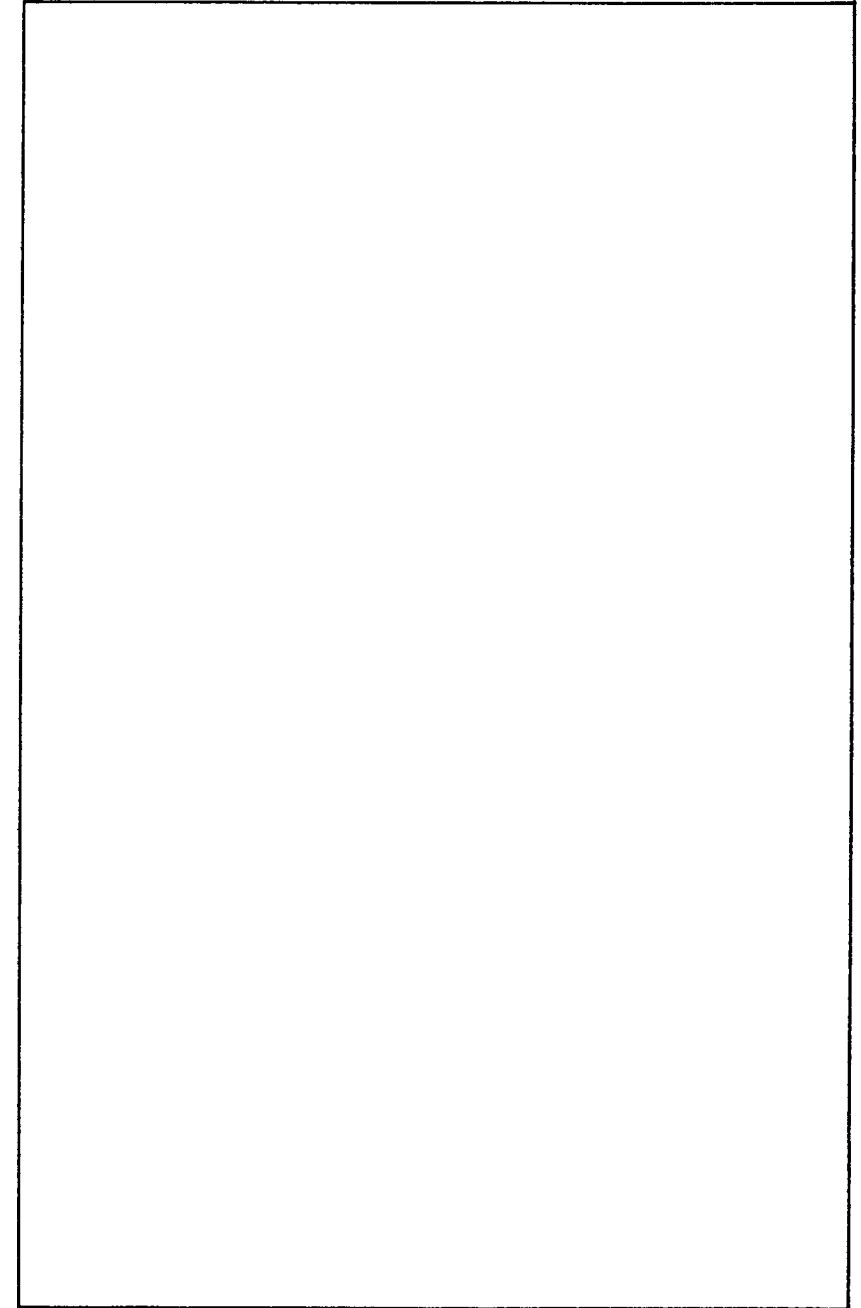
*component of any successful emergency preparedness program and as such was given a priority emphasis during the second year of the coastal Georgia program once many of the plans, maps and other "products" of the program were available for public review and use.*

preparedness. Potential community resources that can be used are churches, civic groups, professional organizations, volunteer groups and business and industry.

The regular monthly meetings of such groups can provide a forum for presentations and discussions about local plans, preparedness activities and mitigation measures. It is not possible to reach the entire population through such meetings and selecting the most appropriate groups is important. In rural areas, attendance at meetings may be poor. In such cases, it is necessary to go directly to those people most difficult to reach. Informal presentations can be made at rural churches, town meetings, civic clubs, etc. Volunteer groups can prove especially helpful. Any volunteer group offering to assist in storm preparedness, response or recovery will likely be a good vehicle for disseminating informational brochures and sponsoring awareness workshops.

Business and industry and professional organizations should

be target groups for information on hurricane awareness and mitigation measures. The insurance industry as well as local lending institutions are excellent audiences for mitigation program presentations. Since members of these groups deal with a public that may not fully understand hazard mitigation as it relates to flood insurance, such presentations can be helpful. Realtors, developers, and construction contractors can also be good target audiences for discussion of flood plain management and available alternatives.



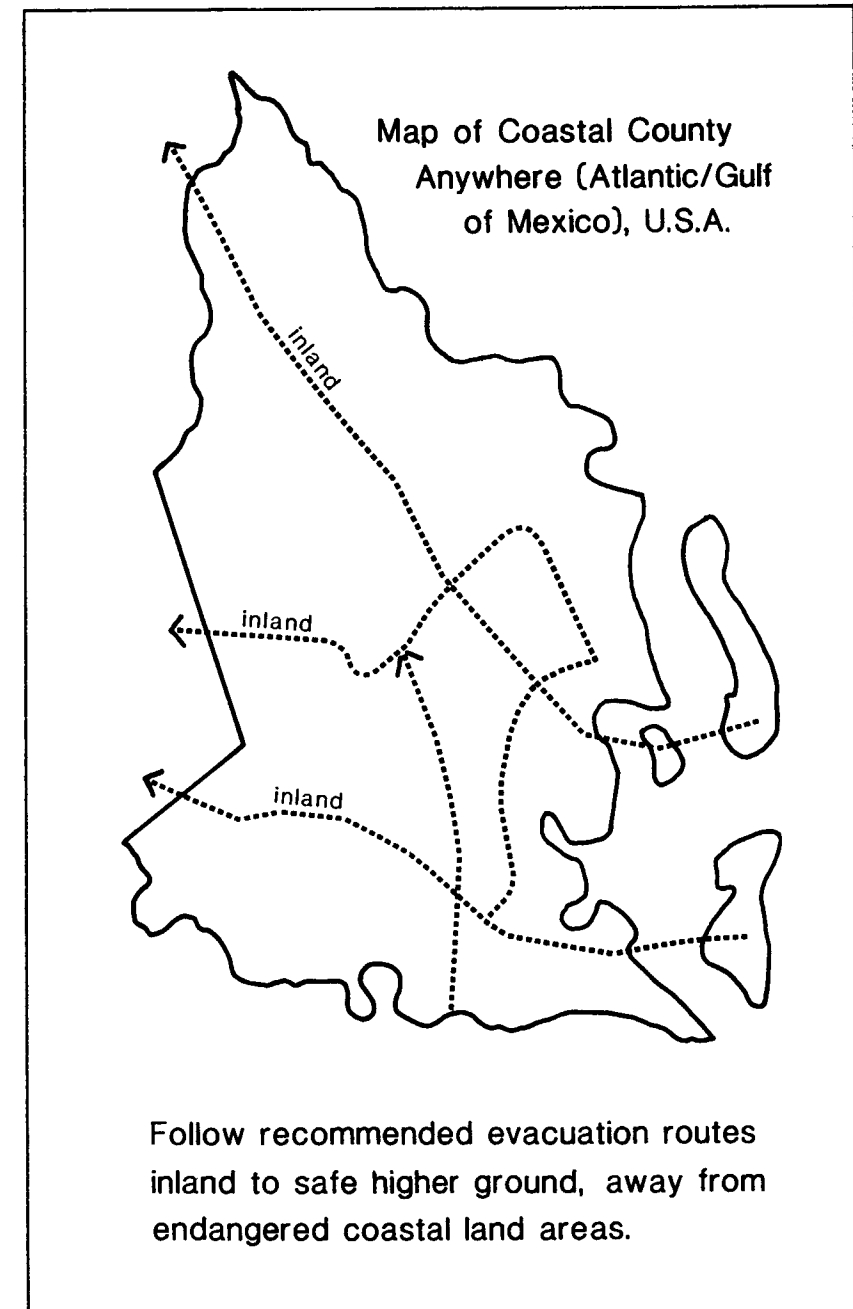
MAPPING

## MAPPING

There are a variety of map resources available for use in a storm preparedness program. The flexibility of using different map products can be an advantage in providing maps for various purposes. However, confusion can also result when a variety of maps is used for similar purposes. Therefore, selection of map products to be used will have an influential and lasting effect on the overall planning effort, and decisions about the types of maps to be used should be given careful consideration at the early stages of program development.

Three basic storm preparedness map "types" have been identified by state civil defense and local governmental officials:

- (1) planning maps
- (2) emergency operations center (EOC) maps
- (3) public information maps



Each of these three types of maps should be developed with different objectives in mind. Maps used in program planning will contain a significant amount of detail. Information such as topographic contours, historical flooding data, etc., location of high ground that can be used for staging areas and shelter sites, etc. is needed. However, the depiction of contours themselves is not necessary on the maps prepared for the local or state emergency operations centers or the general public. The topographic and other information derived from the detailed planning maps is, however, used for purposes such as locating staging areas, sites, evacuation routes, etc., but is not required on the maps used for EOC purposes. Furthermore, maps for the public contain yet less detailed information and are much simpler in scope (see inset at right).

#### Maps for Planning

Maps for program planning must show detailed data pertaining to natural and manmade features and be at a scale to allow for additional data. Simultaneously, the map scale chosen

#### Planning Maps

- o Identification of general topographic elevations and additional "spot" elevations at proposed shelter sites, evacuation routes, etc.*
- o Location of major developed areas (with current population estimates)*
- o Locations of storm shelters, showing primary, secondary, and refuge sites*
- o Locations of hospitals, police, fire and school facilities*
- o Names of unincorporated communities with significant populations*
- o Number of traffic lanes in evacuation routes*

should allow for photographic reduction of the working maps in order that they can be reproduced and included in planning documents. The basic data items useful for inclusion on planning maps are listed in the inset.

The U.S. Geological Survey (USGS) topographic quadrangle series mapped at 1:24,000 can be used for planning purposes, provided the information cited above is added. Although many of these maps are in need of overall revision and updating, an advantage in using USGS quad maps is that the transportation network and manmade features depicted on these maps is quite detailed. Other information shown on the maps includes elevation contours, drainage patterns, and population concentrations. With some updating, these maps may adequately serve the user's needs, particularly in rural areas. These maps are also likely to be the most easily accessible to potential users.

Currently, three types of maps for flood evacuation planning are produced in volume. Flood prone areas have been mapped

- o Major bridges (identify type of structure, i.e., drawbridges, causeways, etc.)*
- o Critical topographic elevation points on evacuation routes (low points subject to early flooding)*

by two sources, USGS and the Federal Emergency Management Agency (FEMA) for use in the National Flood Insurance Program. USGS quadrangle flood maps at 1:24,000 are no longer being produced for all areas of the country and are being replaced by the more detailed FEMA maps. Flood Hazard Boundary Maps and Flood Insurance Rate Maps (FIRM) are consistent efforts at mapping areas subject to 100 year floods. The scale of these maps varies between communities, and the FIRM is accompanied by a flood insurance study publication. Copies of the FIRM and the communities flood insurance study can be obtained from the local government office charged with flood plain management (i.e., building inspection office). In addition, copies of both the FIRM and the flood insurance study should be "standard equipment" in a community's EOC.

The National Oceanic and Atmospheric Administration (NOAA) produces the Storm Evacuation Map (STEM) series, and if available for an area, provides an excellent base from which to develop both planning and EOC maps. This quadrangle



series is generally mapped at a scale of 1:62,500 (approximately 1"=1 mile) and contains the information identified in the inset.

As noted earlier, the STEM series provides excellent maps for storm preparedness planning, as well as visual display. However, because of the extensive data portrayed on these maps, complete coverage of all coastal areas is not expected until 1986, according to NOAA.

State Departments of Transportation (DOT) provide county-base maps generally at a scale of 1"=1 mile or 1:63,360. These maps are good for general planning but do not contain topographic detail necessary in determining elevations. State DOT maps do not provide a cost-effective means to meet the detailed preparedness planning needs, and without supportive data from USGS maps, STEM series maps, or elevation surveys being transferred to them, they have very limited utility.

#### STEM Series Data

- (1) Topographic contours
- (2) Spot elevations (particularly along major transportation routes)
- (3) Flood stages (i.e., 0-10 feet, 10-20 feet, and above 20 feet); these stages are delineated at closer intervals in more populated areas (i.e., major cities)
- (4) Major transportation systems, including roads, rail lines and airports
- (5) A brief narrative on the history of hurricane occurrence showing dates and storm surge heights
- (6) Population figures for developed areas, including both incorporated and unincorporated but highly developed areas.

### Maps for the Emergency Operations Center (EOC)

For EOC purposes, one map showing the entire county or planning area, as well as its relationship to the region and adjacent counties is preferable. The primary purpose of an EOC map is to serve in the "operational" phases of an emergency situation and provide pertinent information to local and state officials charged with managing the emergency response. With this purpose in mind, the map(s) prepared should identify only data essential to produce effective and timely decision making. Too much information will clutter the map(s) and diminish their utility, and too little information will be an even greater liability.

Of the four map sources previously noted, only DOT maps will likely depict an entire county, and much additional work is needed to add the necessary data that makes these maps to be useful for EOC purposes. Given the previously identified deficiencies in DOT maps, it is very probable that it will be most cost effective to either:

### Additional Data for Inclusion on EOC

#### Maps

- (1) Delineation of evacuation zones for counties, cities, and developed areas
- (2) Identification of evacuation routes
- (3) Hospitals, nursing homes, medical clinics, detention, facilities, etc., where a dependent population or populations requiring special evacuation equipment would be located.
- (4) Storm shelters
- (5) Area emergency response command posts (i.e., EOC, Police, Fire, EMS, etc.)
- (6) Major potential traffic congestion points
- (7) Traffic control points

(1) construct a mosaic map of the county (or planning area) using either STEM or USGS quads spliced together; or  
(2) prepare an entirely new map specifically designed for emergency management purposes. Of those two alternatives, the splicing of several USGS or, more preferably STEM quads, will be the most economical approach. If available for a particular area, STEM quads are preferable to USGS quads due to their specific design for use in storm preparedness activities and the fact that additional pertinent data can be cartographically added to these maps without making them too "busy." The use of STEM quads will require the addition of the data identified in the inset.

EOC maps should be clear and concise. As noted earlier, there appears to be little need for actual topographic contours on such operational maps. Spot elevations should be added in critical low-lying areas. During the planning stages, evacuation zone boundaries, evacuation routes and traffic control points would have been identified using

## Sample County EOC Map



topographic and other data; these items should be included on the EOC map.

### Maps for the Public

Informational maps should be clear, concise, easy to read and contain only essential public information. Basic information on such maps should include:

- (1) Evacuation zones
- (2) Evacuation routes
- (3) Location of primary, secondary and refuge shelters
- (4) Public facilities (i.e., hospitals, police and fire stations, etc.)

The purpose of such maps is to inform the public, as simply as possible, whether they are in a danger area, where they should go for safety and how to get there. Hospital locations may not be necessary for long-time local residents, but, considering the influx of newcomers to

### Preparation of EOC Maps

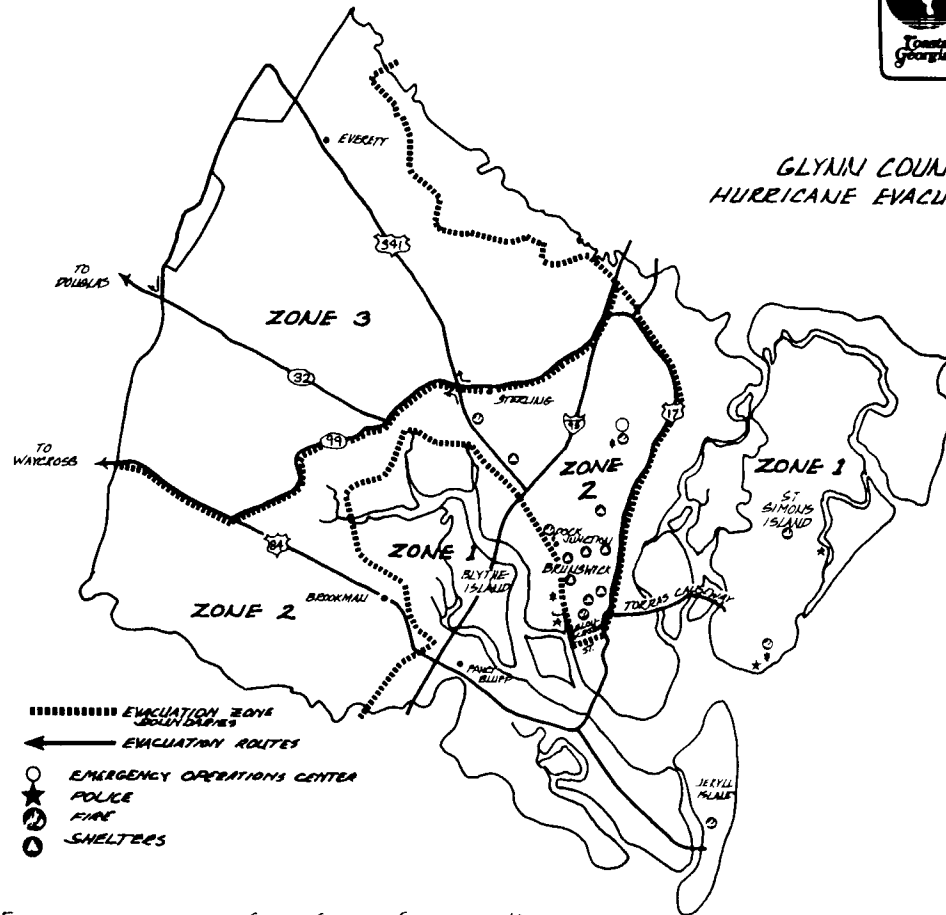
The step-by-step process used in preparing EOC maps for the model coastal Georgia program is identified below. This process proved successful and should, with minor modifications, be adaptable to other geographic areas that do not have STEM quad coverage of their area.

The first step in the process is to obtain or prepare a mylar base map at a scale of approximately 1 inch or 2 inches = 1 mile. Such a map should show existing transportation facilities, jurisdictional boundaries and names, and a minimum of other data that might "clutter" the map.

SAMPLE MAP  
FOR  
PUBLIC DISTRIBUTION



GLYNN COUNTY  
HURRICANE EVACUATION MAP



FIND YOUR LOCATION ON THE GLYNN COUNTY EVACUATION MAP ABOVE AND DETERMINE WHETHER YOU ARE IN ZONE 1, 2, OR 3. WHEN YOUR ZONE IS ORDERED TO EVACUATE, TAKE THE EVACUATION ROUTE DESIGNATED BELOW AND GO TO THE DESTINATION FOR THAT ROUTE.

ZONE	AREA	ROUTE AND DESTINATION
1	ST. SIMONS ISLAND, JEKYL ISLAND, BRUNSWICK SOUTH OF L STREET, FANCY BLUFF AND BLYTHE ISLAND	Hwy. 84 TO WAYCROSS
1	HIGHWAY 17 NORTH OF TORRAS CAUSEWAY	Hwy. 303 TO Hwy. 341 TO Hwy. 99 WEST TO DOUGLAS
2	NORTH BRUNSWICK, DOCK JUNCTION	Hwy. 341 TO Hwy. 99 WEST
2	BROOKMAN	Hwy. 84 TO WAYCROSS
3	STERLING AND EVERETT	Hwy. 341 TO BAXLEY
3	THALMANN	Hwy. 32 TO DOUGLAS

PREPARED BY THE COASTAL AREA PLANNING AND DEVELOPMENT COMMISSION  
THROUGH A GRANT FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY  
WITH ASSISTANCE FROM THE GEORGIA EMERGENCY MANAGEMENT AGENCY

The second step requires the use of a professional production artist who creates a photographic negative from the original mylar map, and then produces a "photographic mylar," which is a white translucent plastic photographic quality surface, on which images do not fade. This map should be prepared at a minimum scale of 1 inch = 1 mile for rural areas and a more precise scale for urban areas to allow for the detailed mapping that will follow. After the completion of this phase, the mounting process should be carried out.

A dry mounting process is the third step in the process and is necessary when using a photographic mylar. For a county

coastal areas, as well as the seasonal tourist population, they appear to be a valuable addition.

#### Uniform Mapping System

To date, hazard awareness maps have not been broadly distributed to the public. As interest increases and methods for publication and dissemination are employed, a system of uniform symbols is a definite advantage in alleviating confusion. Maps prepared for public distribution require some degree of consistency if they are to be effective communication devices. Map symbols used for these and other types of hazard awareness maps are currently not standardized. In developing the coastal Georgia program, the map symbols on the following page were agreed upon by all participating federal, state and local agencies and would have applicability to other geographic areas involved in storm preparedness planning and management:

*map with average dimensions of 4' x 5', a device known as a vacuum frame can be used. (Most picture framing shops have these.) The map is bonded to a foam core backing with the vacuum frame. Foam core is light weight, durable backing allowing for easy handling and proper hanging of the map. Using foam core also protects the map surface from tearing. With the mounting complete, colored film is placed directly on the map surface, to delineate areas prone to flooding at various storm surge levels. This film has a sticky back coating which allows it to adhere directly to the map surface. Tone colored effects can be created by overlaying the film. The more overlaying, the darker the color*

### SUGGESTED UNIFORM MAP SYMBOLS

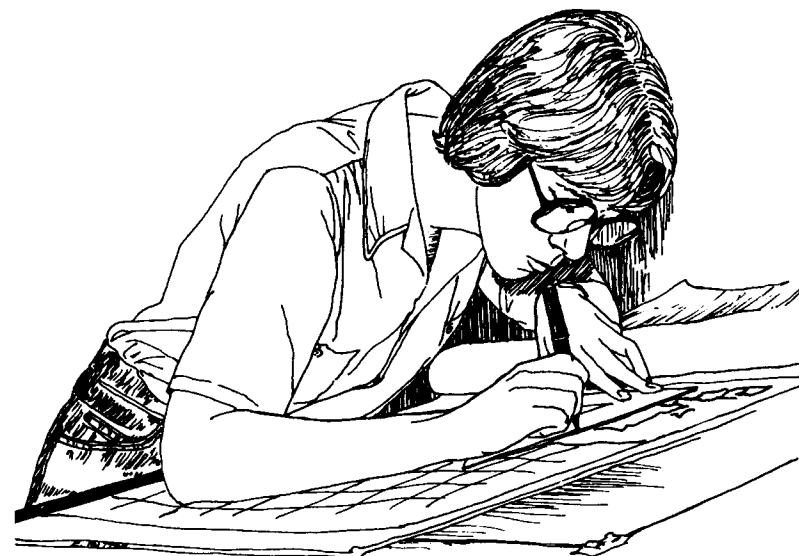
Police	★	Retirement/Nursing homes or other dependent population	+
Fire	🔥	Emergency Medical Service (EMS)	✱
Schools	🏫	Emergency Operations Center (EOC)	●
Shelters	⬆	Evacuation Zone Boundary	■■■■■■
Hospitals	+	Evacuation Routes	➡
Public Health Units	🏥	Critical Points	✕
Drawbridge	⚓		

### Map Preparation and Production

The process of producing storm preparedness EOC maps for individual counties or communities will vary with the resources available. The assistance of a cartographer or

*indicating a greater degree of danger from flooding. The legend, detailed insets of major cities, and other tables and charts can be added to the base map as separate items.*

*At this point, acetate (clear plastic film) overlays can be used for additional information. Using overlays,*



experienced draftsman is essential. This expertise should be coupled with existing map resources for the particular area to determine the most effective and efficient method of producing the desired map products. The most efficient method of producing a one-of-a-kind EOC map involves taking several STEM quads and splicing them together to form a single map with the desired coverage. If this alternative is used, the STEM quads should be spliced together edge to edge and trimmed to the desired shape (to depict a county, city, region). Completion of EOC map preparation would follow the 3-step process presented in the inset. (See pages 36-41.)

In addition to individual county EOC maps, regional (multi-county) EOC maps are also needed -- primarily by the state lead emergency management agency. The purpose of these maps is to promote consistency between local and state emergency response. Data contained on all county maps should also be depicted on the regional maps that the state will use. Through the use of consistent map products,

## Regional EOC Map



local/state communication will be upgraded and coordination enhanced.

*the map surface will no longer be directly marred, and items can be easily added to or deleted from the map. The uniform map symbols and other data (evacuation zone delineations, evacuation routes, etc.) can now be placed on the overlays. Once completed, the EOC map will be complete and ready for use by local civil defense officials*

**MITIGATION**

## MITIGATION

The most destructive component of a hurricane is the water damage resulting from the storm surge. The flooding associated with this "wall of water" causes the most destruction to coastal properties. Therefore, mitigation, or reduction of the harm generated by this surge, is a vital element in a comprehensive storm preparedness program. The following section presents a discussion of alternative methods available to reduce property damage from flooding.

A flood-damage mitigation program should be designed to protect both existing and future development. The following table summarizes the options of local governments with regard to flood-loss prevention methods and devices:

*The mitigation function within the coastal Georgia program yielded significant accomplishments. Research of state and local government coastal zone land use policy was conducted to*

## FLOOD-LOSS PREVENTION METHODS AND DEVICES

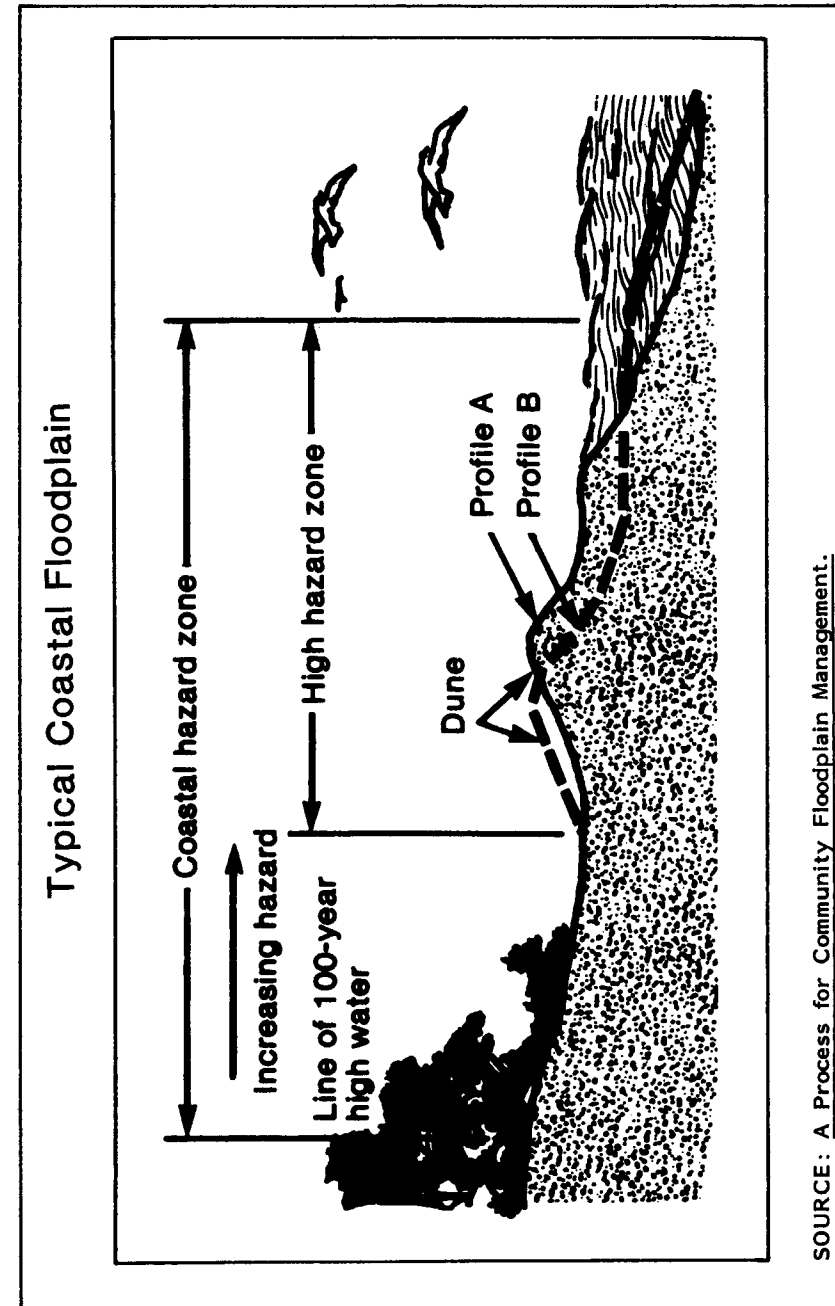
<u>Purpose</u>	<u>Method or Device</u>
Regulation of flood plain uses	Zoning ordinance Subdivision ordinances Special flood plain regulations Sanitary ordinances Building codes/ordinances
Discourage physical develop- ment in identified flood plains	Public information Warning signs Taxing policies Financing policies Public-facility extension policies Flood-insurance costs

*determine if such policy could be useful in the coastal area of Georgia. The coastal zone management plans of Georgia in North Carolina, South Carolina, Wisconsin, Michigan and Rhode Island were among the materials assessed for applicability. Through this research, example policies (and the rationale supporting these policies) were derived that form the basis for wise management of areas subject to flooding. These example policies were adapted to coastal Georgia and provided to local coastal governments to further local officials' knowledge of the situation, while simultaneously serving as the foundation for local hazard mitigation efforts.*

Removal or conversion of existing physical development	Public acquisition Urban redevelopment Public nuisance abatement Nonconforming uses Conversion of use Public-facility reconstruction
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Protection of existing and future physical development	Flood-control works: Reservoirs Channel Improvements Diversions Floodwalls and levees Flood warning and evacuation Floodproofing
--	--

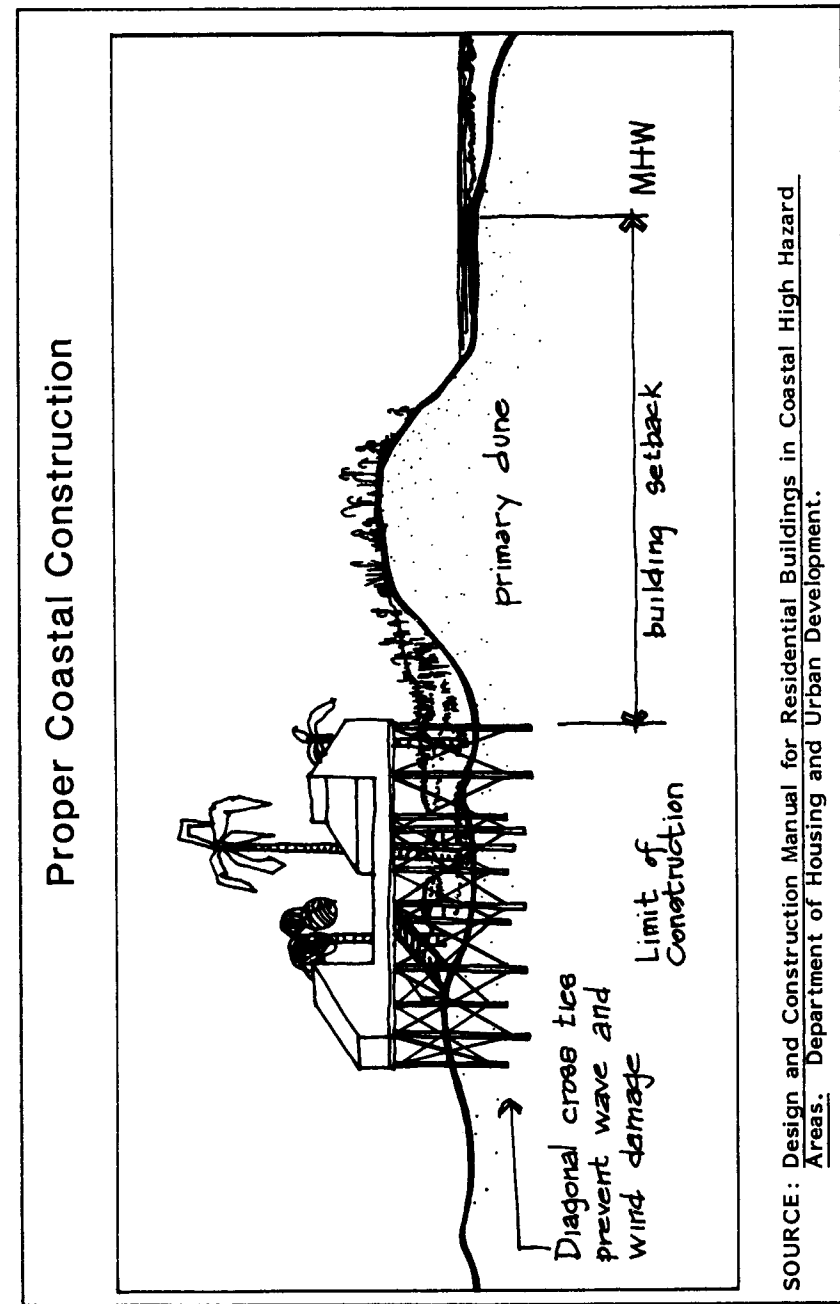
Congress enacted the National Flood Insurance Program (NFIP) in 1968 as a result of increasing yearly property losses in the nation's flood plains. The purpose of the program is to



make flood insurance available at an affordable rate and to encourage wise and prudent use of flood plains.

The community with an identified flood hazard area that does not participate in the NFIP is severely restricted from receiving federal assistance. Federal agencies may not approve grant-in-aid funding, federally guaranteed mortgages (Federal Housing Administration mortgage insurance, Veteran's Administration mortgage guarantees, etc.), direct loans, disaster relief, or federally supported improvements of property located in identified flood-prone areas in non-participating communities. These federal incentives are very persuasive at the local level. Virtually all lending institutions today require flood insurance protection when financing, building, or purchasing structures located in the identified flood plain.

Local governments are responsible for adopting and enforcing flood plain regulatory measures. The federal



government, through FEMA, provides technical assistance to local governments primarily through FEMA's regional offices and state flood plain management offices. Model flood plain management ordinances are available through FEMA, and that agency also undertakes compliance monitoring to ensure acceptable program management.

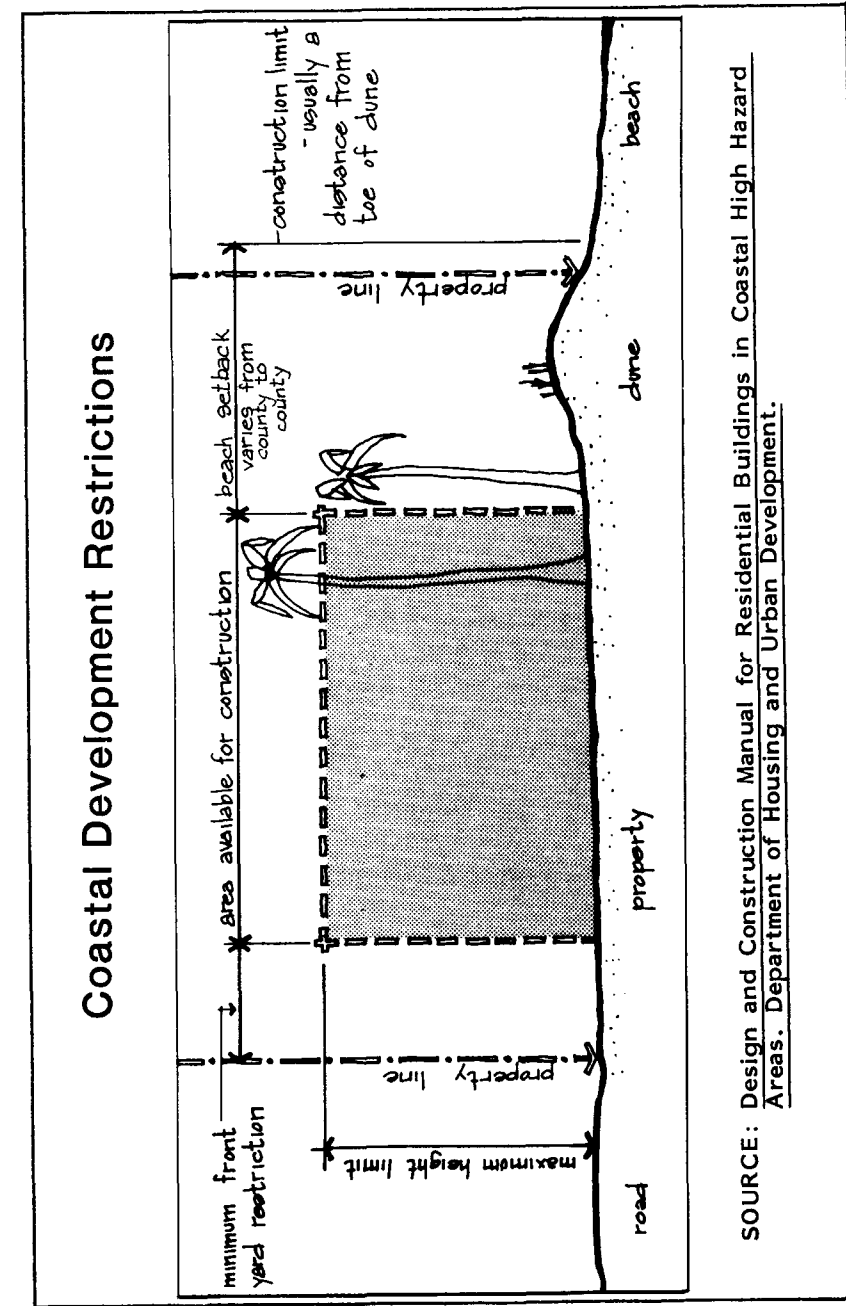
Several methods of mitigating flooding damage are available to local governments and can be employed to reduce the loss of property caused by coastal flooding associated with a hurricane and resulting storm surge. Listed below, and summarized on the following pages are these alternatives.

- (1) Zoning ordinances
- (2) Subdivision regulations
- (3) Building codes and techniques
- (4) Open space and land acquisition
- (5) Discourage development in identified flood plains
- (6) Flood warning and evacuation plans

*The provision of technical assistance and/or training to local governments to encourage consistent implementation of local flood plain management programs can come from several sources. At the outset of the coastal Georgia program, specific work items were identified that would promote a better local understanding of alternative flood plain management methods available to city and county governments. These work items included several workshops for local elected officials and their inspections personnel in the eight-county planning area and individualized on-site technical assistance sessions with the inspections personnel.*

The adoption and implementation of land-use regulations or local zoning ordinances are preceded by land-use planning. With the adoption of a local zoning ordinance, a community has also implicitly adopted policies concerning the physical growth within its jurisdiction. One of the most effective means of controlling growth in the flood plain is to create specific zoning districts identifying ecologically fragile or high hazard areas. Through the use of local zoning powers, both the density and type of development in a particular area can be controlled. Nonconforming uses in a flood zone may be allowed to continue as they exist but may also be prohibited from expansion. If a particular nonconforming use is discontinued for a period of time, a local ordinance may have provisions for its elimination. State land-use legislation may also permit amortization of nonconforming uses by local governments, whereby the use may be phased out over a period of time.

Controlling density can mean fewer structures in the flood plain and fewer losses in the event of a flood. Guiding the



type of development may restrict potentially "high risk" ventures from locating in the flood plain. For example, recreation structures such as picnic shelters would cost less to replace than commercial or industrial uses and would be less restrictive structurally, in terms of flood-water flow. A final option is to prohibit development completely in extremely high hazard areas.

#### Subdivision Regulations

Subdivision regulations can also be used by local governments to regulate development in the flood plain. Under such regulations, the developer must meet certain requirements in order to build the proposed development. Proposed subdivision plats must be submitted to the local planning body for review and approval prior to the initiation of any development. Flood protection measures may be required of the developer for utilities and building sites before dedication and sale is allowed. Such measures may include a requirement that roads and bridges be designed and constructed to withstand flood-water velocities and

*The focus of the regional workshops was to acquaint both local elected officials and their staffs with alternative methods of flood-plain management and to provide detailed information about the NFIP requirements. While the workshops and technical assistance sessions were being conducted in coastal Georgia, many counties and cities were transitioning from the "emergency" phase of the NFIP to the "regular" phase of the program. The resultant changes in local program-administration requirements generated a significant need for increased training and technical assistance to allow for a smooth transition; simultaneously they aided in maintaining a high level of*

prevent isolation, utility disruptions and other factors. Additional requirements could include public dedication of easements along waterways to allow unimpeded drainage.

### Building Codes and Techniques

Building codes require compliance with an established set of minimum building-construction standards. Codes may include requirements for elevation, construction practices, and specify standards for materials. Lot grading can also be required to meet certain standards to prevent flooding. Building codes may also require specific practices and/or materials, such as adequate foundation piling. These codes will require inspection of the premises at stated intervals in the building process by local officials. Building construction checklists, as specific suggestions for construction standards, can be provided to builders and developers as well as to prospective new home owners.

A building-permitting system is a requirement in administering the NFIP. The local building inspector (or

*local government interest in hazard mitigation.*

*The workshops were organized by the local regional planning agency (the Coastal Area Planning and Development Commission) and supported by the state Flood Management Coordinator's Office and FEMA. Federal, state and regional staff members attended the regional workshops and participated in the programs. This approach encouraged a coordinated local/state/federal response to flood plain management issues.*

*Technical assistance provided to local governments in hazard mitigation was forthcoming directly from the Coastal*

Inspections Department) plays a vital role in a community's enforcement of such a system. The building inspector, in performing his duties, is the primary individual responsible for ensuring compliance with the implementation of land-use and flood-plain management ordinances.

#### Open Space and Land Acquisition

Retaining a flood plain as open space allows it to be maintained in its natural state. No man-made obstructions are created; therefore, flood damage is minimal or non-existent in an open-space area.

Some communities are following the federal government's lead in actively seeking to acquire flood-plain property. This can be done through the direct purchase of such property with funds from local budget appropriations, special loan programs, or special funding sources. Developers can be encouraged or required to dedicate lands located in the flood plain to the local government. Such areas can be

APDC. As the regional planning agency serving the entire Georgia coast, this agency could best perform the "on-site" assistance functions. The types of aid rendered to city and county officials ranged from telephone consultation regarding specific local issues to preparation of resolutions, ordinances, etc., for adoption and use by local governing authorities.

From an overall perspective, this two-fold approach of providing training and supplementing it with ongoing technical assistance worked well in coastal Georgia. Urban governments tended to benefit the most from the regional workshops while rural governments, with

aesthetically pleasing, useful for recreation, and reduce the burden on the community in terms of flood loss.

#### Discourage Development In Identified Flood Plains

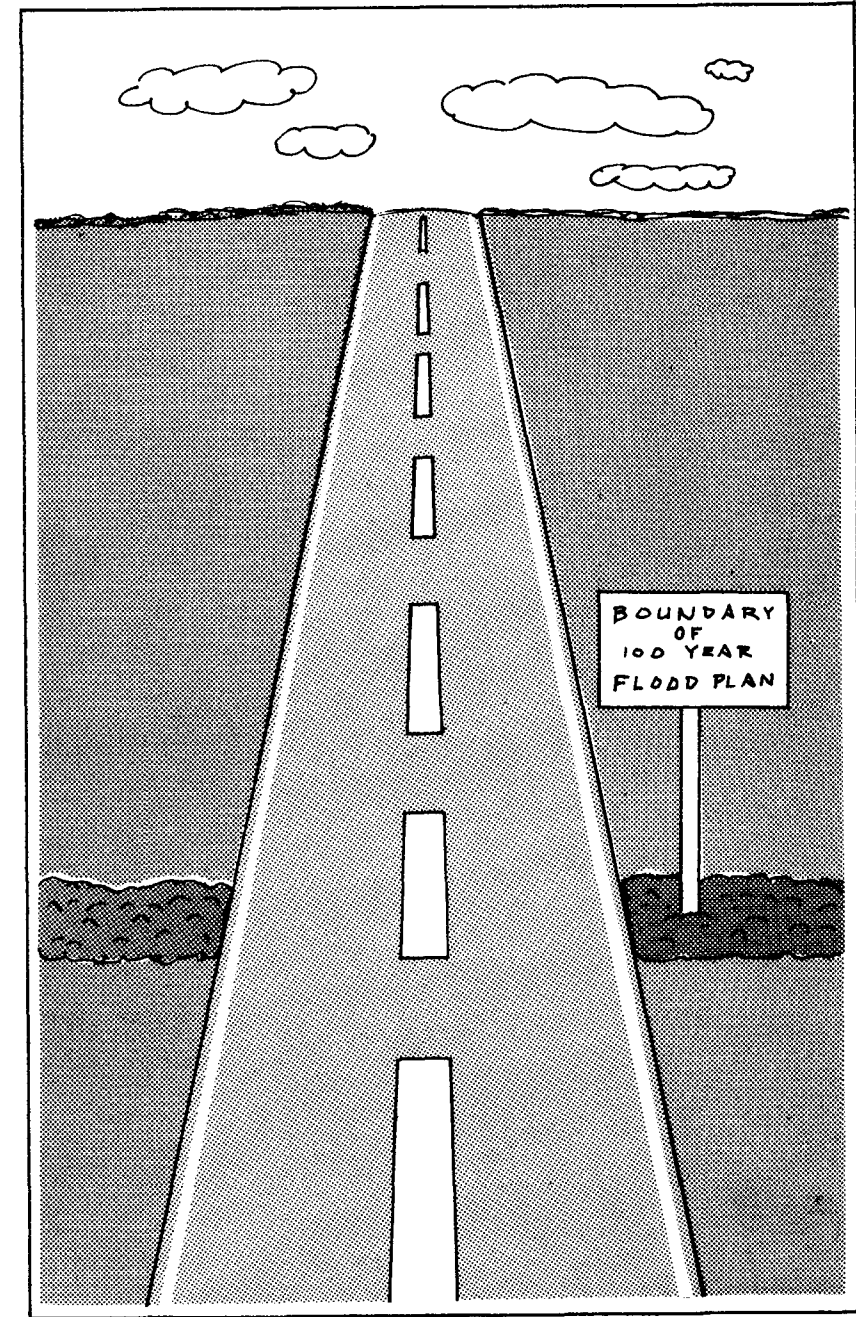
Some individuals have concluded that the most prudent flood plain management technique would be to discourage further development in such areas. This may not always be feasible or realistic. However, deterrents can be employed to discourage development of flood plains. They include public information, warning signs, historic hazards data, taxing policies, and public facility extension policies.

Public information can bring the public's attention to the hazards involved in living in a flood plain. In situations where this method would not serve as a total deterrent, it will assist citizens in understanding the choices and resultant objectives of local officials in the enforcement of land use and flood plain management regulations.

*less internal capabilities, tended to use the direct technical assistance services more.*

Warning signs may also be used to discourage flood plain use. Although it would probably not be a popular tool when employed by local officials, warning signs could be placed on public rights-of-way to identify 100-year flood boundaries. Subdivision plats could also be stamped by the permitting officer, noting that the property (or specific portions thereof) is subject to flooding at a given interval.

Real property assessment and taxing is one of the most important considerations affecting land use. This item is usually reflective of the free-market demand for a particular piece of property. Most coastal lands are low-lying, and the ever-increasing influx of people to coastal areas creates a need for modification of low areas to make them habitable. The pressure to convert flood plains to lands for residential development is a very real one. If construction of structural flood loss prevention facilities becomes necessary, these costs can be assessed (in part or in total) against the land benefiting from such facilities.



When this becomes necessary, it is important to carefully analyze the cost-benefits of protecting private investment from flood loss as compared with implementing sound land-use and building construction programs.

### **Assistance or Training Needs**

The planning and technical assistance needs of local government personnel charged with the enforcement responsibilities for mitigation activities varies greatly. Research and experience has indicated that urban local governments with more sophisticated administrative infrastructures possess greater capabilities in effectively enforcing hazard mitigation measures than do their rural counterparts. There are exceptions to this; however, counties and cities with larger populations can be expected to have commensurately larger staff capabilities with greater expertise in the area of hazard mitigation. To provide for a consistent level of enforcement for local hazard mitigation requirements among all local governments, it is necessary to implement training and technical

assistance activities that can upgrade and complement the enforcement capabilities of local government personnel and provide for a more consistent and uniform level of hazard mitigation administration.

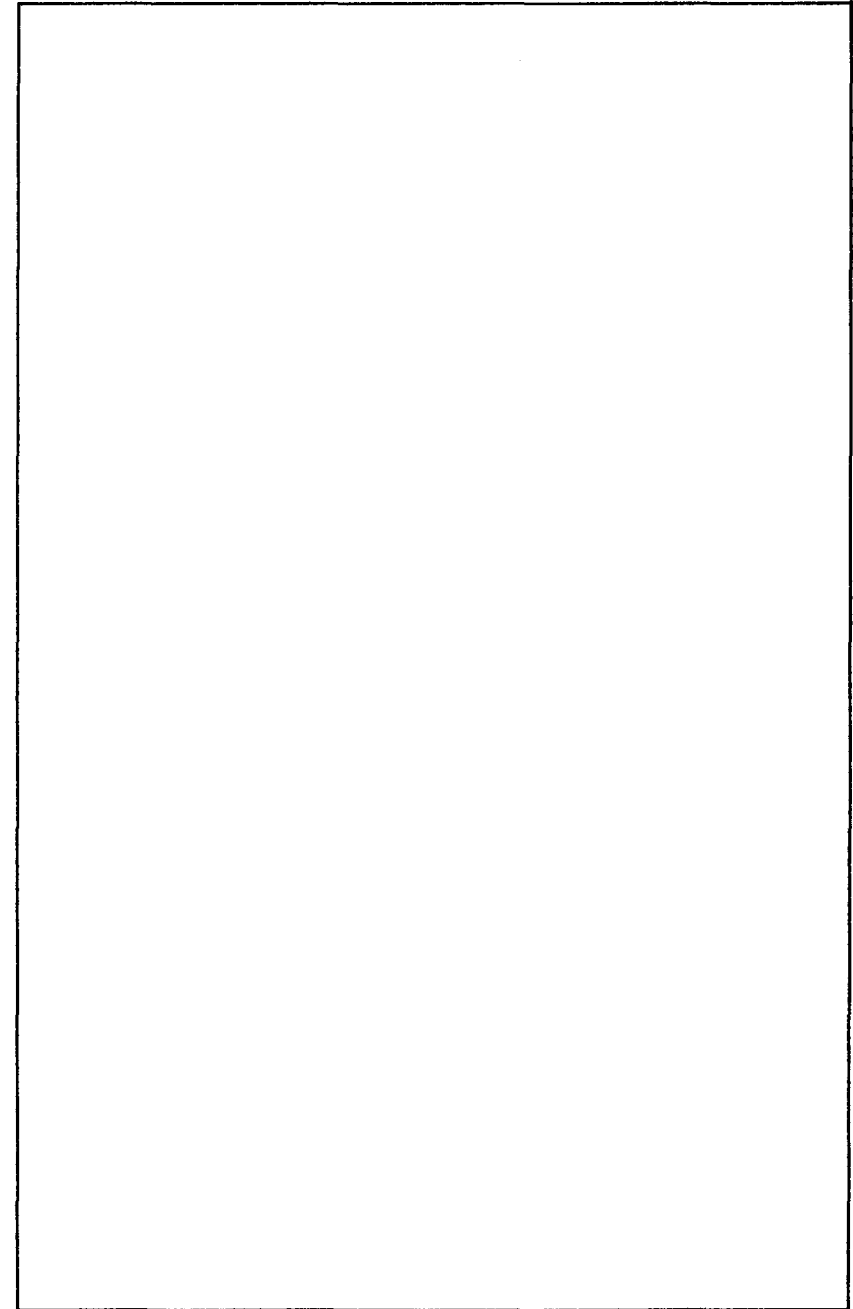
Workshops on the administration of the National Flood Insurance program should be held to educate local building inspectors/administrators about local responsibilities and requirements. These training workshops will help local building officials become aware of the linkages between their actions and the overall flood hazard mitigation objectives of federal, state and local levels of government. Institutional requirements of the NFIP, as well as other applicable programs, can be presented and explained at these workshops to provide a greater awareness and understanding of these regulations. In addition, practical suggestions of methods to improve building permitting practices, subdivision regulations, zoning ordinances and other mitigation oriented ordinances can be covered to illustrate their necessity and the benefits derived by the community

and its residents from the successful management of high-hazard areas. An understanding of existing programs, their goals and objectives should lead to greater acceptance of hazard mitigation by local administrators, thereby enhancing enforcement capabilities.

Printed information should be provided at these workshops, describing the goals and objectives of the NFIP and other relevant hazard mitigation programs. To upgrade the enforcement capabilities of local personnel, the initial audience should be local government staff responsible for the administration and enforcement of mitigation ordinances and related programs. Additionally, other organizations, including local lending institutions, land developers, industries, and the insurance industry can also be reached through this type approach.

The need to reach a consistent level of hazard-mitigation enforcement capabilities at the local government level cannot be overstated. This task is vital to local

administrators of individual programs as well as attaining state and federal government goals. To better manage the program locally and gain cooperation of the general public, local officials must understand and promote the goals and objectives of individual hazard mitigation programs and activities.



**CONCLUSION**

## CONCLUSION

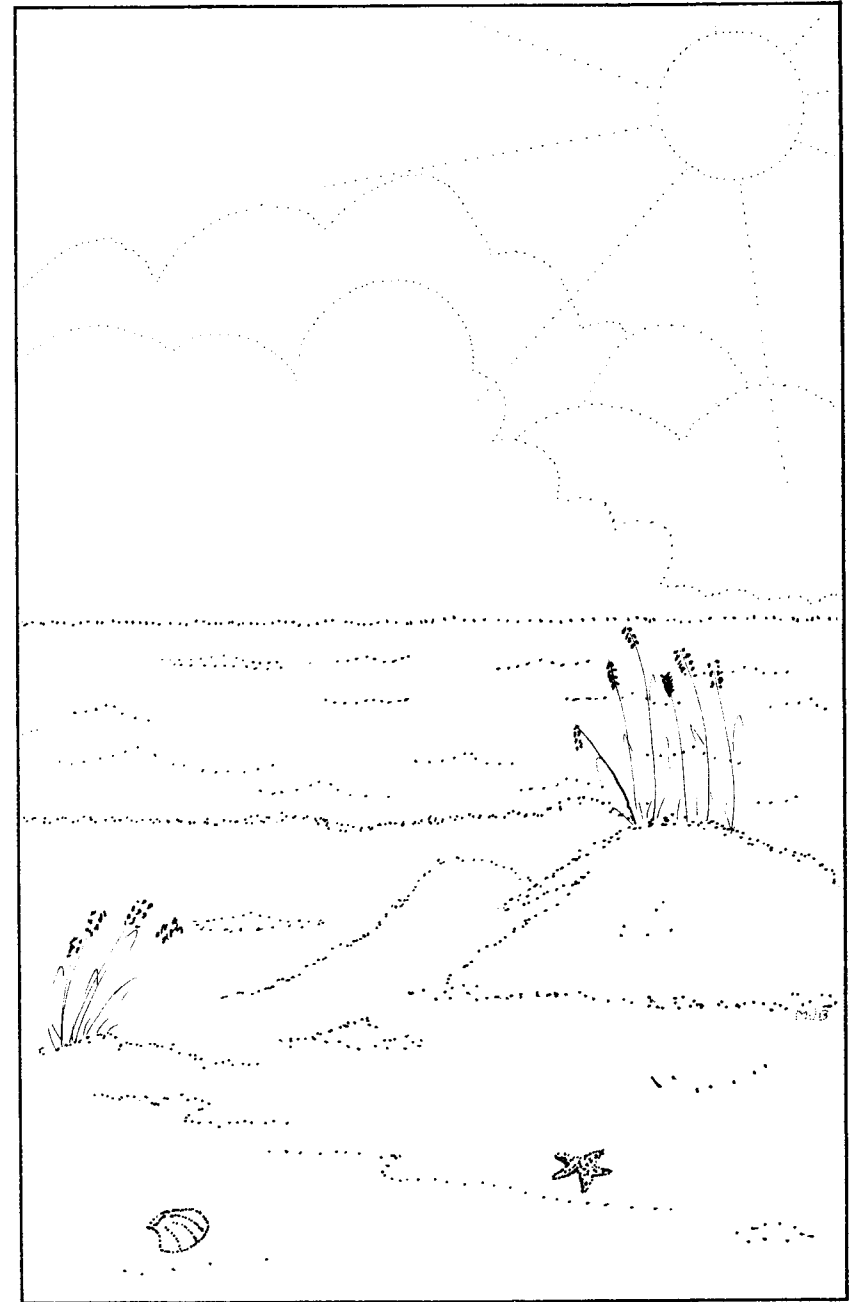
A comprehensive storm-preparedness program encompasses all phases of preparing to respond to an emergency situation created by a hurricane: planning, mapping, education and mitigation. All of these program phases can be successfully implemented only if guided by a formal advisory group of local, state, and federal agencies involved in emergency response.

The FEMA model storm-preparedness program in coastal Georgia (1980-1982) incorporated all these phases and has been successfully implemented. The project has shown that regional substate planning agencies can be an effective mechanism to help groups and agencies coordinate their emergency preparedness-planning efforts.

The ultimate evaluation of such a program can only be attempted after a storm occurrence along Georgia's coast. If the two and one-half year model preparedness program has

been effective, the loss of life and property associated with this occurrence will be less than without the program. However, not in even such a test can the effort be accurately evaluated due to the uncontrollable variables of weather severity, tidal stage at storm landfall, etc. It is accurate to assume, however, that local, state and federal representatives familiar with the program do agree that coastal Georgia is now in a much better storm-preparedness posture as a direct result of the program.

Preparedness planning is a continuous process of assessing vulnerability, identifying alternatives and agreeing on responses to these situations. Ongoing modifications and refinements to the process will be needed to maintain the reliability of the system. An ongoing commitment to preparedness planning is essential to its overall success.



**APPENDIX**

APPENDIX A

BYLAWS

OF

THE CAPDC ADVISORY COUNCIL

ON STORM PREPAREDNESS

ARTICLE I - NAME AND LOCATION

Section 1. The name of this organization shall be the CAPDC ADVISORY COUNCIL ON STORM PREPAREDNESS, hereinafter referred to as the Council.

Section 2. The Council has no office or staff. Its address shall be the Coastal Area Planning and Development Commission, P.O. Drawer 1917; Brunswick, Georgia 31521.

ARTICLE II - PURPOSE

Section 1. To consider and make recommendations through the Executive Director, in concurrence with the Georgia Civil Defense, to the Commission on the implementation of a Storm Preparedness Program for Coastal Georgia.

Section 2. To provide continuing liaison and information services in order to ensure communication of planning process to the general public and the appropriate agencies and organizations.

Section 3. To provide guidance to the Commission in preparing hurricane response

plans and other products under contractual obligation to the Federal Emergency Management Agency.

ARTICLE III - MEMBERSHIP

Section 1. The Council shall consist of not less than forty (40) members and not more than seventy (70). Its membership shall include appointments by municipal and county governments within the Coastal Area Planning and Development Commission region in the same ratio as the CAPDC Board of Directors. Individuals appointed shall be those who have direct responsibility or interest in storm preparedness planning, response or recovery.

Section 2. In addition to municipal and county government appointees from the CAPDC region, there shall be appointments from various federal, state and volunteer agencies with responsibility or interest in storm preparedness planning, response or recovery.

Section 3. The Council shall include appointees from the Georgia Area Five Civil Defense Association who will represent the interests of counties outside the CAPDC region which will receive and shelter coastal evacuees.

Section 4. The Council may appoint additional members and representatives in ex-officio status to represent local, state or federal entities or volunteer groups as it deems necessary.

Section 5. Members of the Council shall be automatically terminated after having missed three consecutive meetings without an

acceptable excuse written and submitted to the chairman of the Council for approval. The entity represented by the member will be asked to recommend a new representative.

#### ARTICLE IV - OFFICERS

Section 1. Officers of the Council shall be a Chairman, Vice Chairman, and a Secretary who shall be elected annually from among members of the Council by a majority vote of members present and voting at the Annual Meeting.

Section 2. Officers so elected shall serve for one (1) year, or until their successors have been elected. No officer shall hold the same office for more than two (2) consecutive terms.

Section 3. Vacancies in offices occurring between Annual Meetings of the Council may be filled by election by a majority vote of members present and voting at any meeting of the Council. Officers so elected shall serve until the next Annual Meeting of the Council.

Section 4. The Chairman of the Council shall be the chief officer of the organization and shall preside at all meetings of the Council. The Chairman, subject to the approval of the Council, shall appoint chairmen of sub-committees. The Chairman shall not serve more than two (2) terms of office.

Section 5. The Vice Chairman of the Council shall preside at any meeting of the Council in the absence of the Chairman, and in such case, have all the responsibilities and perform all the duties of the Chairman. The Vice Chairman shall have and perform such other duties as

may be assigned by the Chairman of the Council.

Section 6. The Secretary of the Council shall cause minutes to be kept at all meetings of the Council and see that these minutes are distributed to the members of the Council within a reasonable period of time after each meeting. The Secretary shall preside at all meetings of the Council in the absence of the Chairman and Vice Chairman and in such cases shall have all the responsibilities and perform all the duties of the Chairman. The Secretary shall have and perform such duties as may be assigned by the Chairman of the Council.

#### ARTICLE V - MEETINGS

Section 1. The Annual Organization Meeting of the Council shall be held not earlier than October 1, and not later than January 31, setting annual priorities, Council work program in accordance with contractual obligations, and for any other business that may arise.

Section 2. The Council shall meet on the fourth Tuesday of even numbered months unless otherwise called by the Chairman or the Council.

Section 3. Special meetings may be called by the Chairman at the request of ten (10) members of the Council.

Section 4. Notice of each meeting shall be mailed to each member of the Council at his last known post office address at least ten (10) days in advance of the meeting.

Section 5. One third (1/3) of the Council shall constitute a quorum for the transaction of business at any meeting of the Council. The presence of less than a quorum may adjourn a meeting until such time as a quorum is present.

Section 6. A majority in number of members present and voting at a meeting, at which a quorum is present, shall be required for approval of any action by the Council.

Section 7. Each member of the Council or his agency representative is entitled to one (1) vote at any meeting at which he is present. No proxy votes shall be allowed.

#### ARTICLE VI - COMMITTEES

Section 1. Executive Committee. The Executive Committee shall be composed of representatives as follows:

Chatham County	2	Dept. of Human	1
Savannah	2	Resources	
Glynn County	1	Department of	1
Brunswick	1	Transportation	
Bryan County	1	Georgia State Patrol	3
Camden County	1	Georgia Forestry Comm.	1
Effingham County	1	Dept. of Community	1
Liberty County	1	Affairs	
Long County	1	Dept. of Education	1
McIntosh County	1	U.S. Army-Ft. Stewart	1
Toombs County	1	U.S. Navy-Kings Bay	1
Bulloch County	1	Federal Emergency	1
Ware County	1	Management Agency	
Coffee County	1	Corps of Engineers	1
Georgia Civil	1	Coast Guard	1
Defense		Natl. Weather Service	1

Dept. of Natural	1	American Red Cross	1
Resources		Salvation Army	1
		Total	34

The Executive Committee shall meet monthly or as necessary to conduct Council business. The Executive Committee shall be empowered to carry out all Council business in accordance with the work program as written under contract to the Federal Emergency Management Agency, Department of Natural Resources, Department of Human Resources, and the Department of Community Affairs, which are the funding agencies for this program. The Council Chairman shall be the chairman of the Executive Committee.

Section 2. Nominating Committee. A Nominating Committee shall be appointed by the Chairman of the Council and composed of eight (8) members with due regard to the make up of the Council. The Nominating Committee shall be appointed at the next to last regular meeting of the administrative year and shall nominate a slate of officers at the last meeting of the administrative year.

Section 3. Sub-committees. At least six (6) sub-committees will be established by the Council for the following specific work areas:

1. Training and Education
2. Communications and Warning
3. Resources and Coordination
4. Evacuations and Transportation
5. Shelters
6. Clean-up and Recovery

The sub-committees will include multi-county areas. The responsibilities of the sub-committees will be to meet at least four (4) times per year; identifying needs and goals of the overall sub-committee area; stimulate action; coordinate and make use of the existing services, plans, facilities, and manpower. The sub-committees will operate under the bylaws and policies of the Council and will report their activities to the Council. The sub-committees may elect officers as necessary to carry out activities assigned to them by the Council.

#### ARTICLE VII - DUTIES AND POWERS OF THE COUNCIL

Section 1. The Council shall review plans and projects affecting comprehensive storm preparedness planning in the region and submit such review to the CAPDC for final action.

Section 2. It shall have the power to reject the Chairman's appointments of committee chairmen by a two-thirds (2/3) Council vote.

Section 3. It shall require at each Council meeting a report on operation from any sub-committee and from the CAPDC's Storm Preparedness Coordinator.

Section 4. Council recommendations to the Commission shall be made in writing and presented at a public meeting of the Commission through the Executive Director of the Commission at its next meeting following submission of the recommendations.

Section 5. The Council is free to communicate its findings and recommendations directly to any public or private organization which has

requested review and comment upon any particular project and is encouraged to do so.

Section 6. The Council shall fix the time and place of the Annual Organizational Meeting of the Council.

Section 7. The administrative year of the Council shall extend from October 15th to October 14th.

#### ARTICLE VII - AMENDMENTS

Section 1. Changes to the Bylaws shall be made by recommendations to the Executive Committee of the Coastal APDC through the Executive Director, upon a majority vote of the members of the Council present, and voting, at any meeting of the Council at which a quorum is present, and upon approval of the Coastal APDC Executive Committee and Coastal APDC Board shall take effect.

#### ARTICLE VIII - ADOPTION

Section 1. These Bylaws shall become effective immediately upon adoption of the Council and approval by the Coastal APDC Board of Directors.

Effective Date: \_\_\_\_\_

## APPENDIX B

### **Advisory Council**

State Civil Defense/Emergency Management  
Local Civil Defense/Emergency Management  
Chief Local Elected Officials  
State Patrol/Police  
State Department of Transportation/  
Highways  
State Department of Natural Resources  
State Department of Human Resources/  
Social Services  
National Weather Service  
U.S. Coast Guard

### **Education Subcommittee**

State Civil Defense/Emergency Management  
Local Civil Defense/Emergency Management  
Local Elected Officials  
Local Board of Education  
Board of Regents Representative  
Local Fire and Police Departments  
Private Industry Safety Engineers

### **Local Planning Commissions**

### **Communication/Warning Subcommittee**

State Civil Defense/Emergency Management  
Local Civil Defense/Emergency Management  
HAM Radio Operators  
Local Radio, Television and Newspapers  
State Department of Natural Resources  
State Patrol/Police  
National Weather Service  
State Department of Transportation/  
Highways  
State Forestry Commission

### **Resource and Coordination Subcommittee**

Locally-based State Agencies  
Local Emergency Medical Service (EMS)  
Units  
Business and Private Industry  
Local Professional Organizations (i.e.,  
Doctors, Attorneys, Teachers)  
State and/or Local Red Cross and Other  
Volunteer Agencies  
Local Departments of Government (i.e.,

Tax Assessor, City/County Engineers)

Local Boards of Education

Local Hospital Authorities

**Evacuation/Transportation Subcommittee**

State Civil Defense/Emergency Management

Local Civil Defense/Emergency Management

State Patrol/Police

State Department of Natural Resources

State Department of Transportation/  
Highways

Local Boards of Education

Local Religious Organizations

Local Volunteer Groups and Professional  
Organizations

Local Police and Fire Departments

**Shelters Subcommittee**

State and Local Red Cross

Local Boards of Education

Motel/Hotel Owners

Local Health Departments

Local Police

State Civil Defense/Emergency Management

Local Civil Defense/Emergency Management

**Clean-Up/Recovery Subcommittee**

Local Governmental Departments (i.e.,  
Coroner, Public Works Director, Building  
Inspector, Maintenance, City/County  
Engineers)

State Forestry Commission

State Department of Natural Resources

State Department of  
Transportation/Highways

Local Volunteer Groups

Utility Companies

Private Contractors

Local Civil Defense/Emergency Management

State Civil Defense/Emergency Management

Private Industry

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